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Research, Development and Engineering Division

June 2, 1982

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U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Reference: Docket 99900019/82-01

Attention: Mr. Uldis Potapovs, Chief Vendor Programs Branch

Gentlemen:

This is in reply to your letter of May 14, 1982, regarding the inspection conducted by Mr. H. W. Roberds on March 16-18, 1982, at the ITT Grinnell Industrial Piping, Inc. Plant in Kernersville, NC.

Although the letter had been addressed to Mr. Arthur King, President of ITT Grinnell Industrial Piping, I am replying to your letter on behalf of ITT Grinnell Corporation, and ITT Grinnell Industrial Piping because of my overall responsibility and concern, as part of Corporate management. This including all aspects of Quality Assurance, the compliance with the applicable requirements of the Nuclear Regulatory Commission, and with Section III of the ASME Boiler and Pressure Vessel Code.

Because of our continuing and extensive involvement with the nuclear industry for over 20 years, we view any nonconformance of the Quality Assurance and Inspection requirements with deep concern.

On a continuing basis, all of our manufacturing and sales facilities with ASME Nuclear Certificates are being audited repeatedly, to insure continued compliance with all applicable requirements, and to insure the recognition by all personnel of the responsibilities which each individual has to comply with the applicable requirements. These concerns are further emphasized through internal training programs, meetings, audits, written instructions, Quality Assurance Manuals and other communications.

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ITEM A

NRC Nonconformance Number 1 - Penetrameter Enhancement

Section V of the ASME Code, Article 2, Paragraph T-261, states in part, "Radiography shall be performed with a technique of sufficient sensitivity to display the penetrameter image and the specified hole, which are essential indications of the image quality of the radiograph".

Contrary to the above, radiography of pipe welds was not performed with a technique of sufficient sensitivity to display the penetrameter image, and the specified hole for certain piping assemblies furnished to Tennessee Valley Authority, Hartsville Plants A and B, and the Consumers Power Company, Midland, Unit 1. During a review of radiographs at the Midland site and at ITT Grinnell, Kernersville, North Carolina, it was identified that certain radiographs had been mechanically altered to include an artifical representation of the specified hole of the penetrameter.

(1) Description of steps that have been taken to correct the item

(a) A detailed investigation has been made with respect to the radiographic examination practice at the Industrial Piping Plant in Kernersville, North Carolina. Two individuals were involved, as was reported by the NRC Examiner. Both of these individuals have been terminated.

(b) The actions by the two individuals represented isolated instances involving an occasional problem in resolving the acceptance of a radiographic film based on penetrameter image, even though the radiographic films themselves generally showed adequate density and sensitivity, in accordance with Section V of the ASME Boiler and Pressure Vessel Code. The total number of radiographic films re-examined was 98,955. Of this 239 involved films with penetrameter enhancement representing 0.2% of the total number of radiographic films reviewed. The 0.2% represents 95 welds. For 59 of these 95 welds, one of the two films (each radiographic exposure performed had 2 films) was not enhanced and showed the required sensitivity. The radiographic films for the other (36) welds was reviewed by our Corporate Level III and the writer and found to be interpretable and acceptable.

Investigations and discussions with all of the inspection personnel confirmed that none of the other radiographers were aware of this noncompliance, or have ever performed similar enhancement of penetrameter images on radiographic films with pencil indications.

(d) None of the Supervisors or Managers responsible for nondestructive examination at the Kernersville Plant were aware of instances of penetrameter enhancement by the two individuals involved. None of them would have condoned this type of practice. Similarly, the Senior Management at the Industrial Piping facility at Kernersville was neither aware, nor would have condoned such totally unauthorized and unacceptable practice.

DESIGNATED ORIGINAL

Certified By Rheanne Fouts

Over the years, this writer, as well as others on our staff, have repeatedly examined radiographic films at our various facilities to verify that the practices and techniques are followed. This is to confirm that the techniques and procedures being utilized meet the requirements of Sections III and V of the ASME Boiler and Pressure Vessel Code.

These reviews also have included the radiographic films produced as result of radiographic examinations performed by others, including a number of utilities operating nuclear power plants. This writer has viewed films with penetrameter enhancements at a number of locations not involving ITT Grinnell. However, similar penetrameter image enhancement has not been discovered on any of the films taken at any of the plants operated by ITT Grinnell, where radiographic examinations are performed by in-house personnel.

As a result, this writer has previously prepared evaluation and resolution reports for others on non-ITT Grinnell projects, which were reviewed with the respective Nuclear Regulatory Commission personnel.

We are greatly concerned that such penetrameter enhancement occurred in the radiographic examinations performed by two specific individuals in our employment at the Grinnell Industrial Piping Plant. This was completely contrary to our policy, training, instruction, all applicable procedures and systems.

With respect to the specific actions taken since the discovery of the two items of noncompliance covered in your letter of May 14, 1982, the following actions taken on each are detailed separately as Items A and B as follows:

(A) Penetrameter Enhancement
(B) Incorrect NDE

The question relating to the fissuring in the surface fill-in welds adjacent to 20 girth welds in the stainless steel pipe spool pieces shipped to the Midland Nuclear Power Station was examined previously in detail by this writer. A separate detailed report on this was prepared as a result of these examinations.

This fissure-type indication is unique to the fabrication for this project, since weld deposit surface edge fill-in welds do not represent normal practice in a pipe fabrication plant. They were made, however, in the instance of the Midland pipe because of excessively tight (cosmetic perfection) inspection requirements applied by some inspectors assigned to the Midland pipe fabrication.

This writer strongly objects to cosmetic welding, which does not contribute to weld quality, weld joint integrity and inspectability.

In any case, although the surface weld fissures are of no greater consequence than normal surface laps and slivers in pipe base metals which are acceptable under the applicable piping specifications, the linear surface indications in the fill-in welds are being ground out and rewelded at the Midland site.

DESIGNATED ORIGINAL

Certified By Rheanne Fouts

Since we strongly discourage unnecessary "cosmetic" welding, this condition, should not reoccur on further pipe fabrication at the ITT Grinnell Industrial Pipe fabricating plant in Kernersville, North Carolina.

Very truly yours,

ITT GRINNELL CORPORATION

Helmut Thielsch, Vice President
Research, Development and Engineering

HT/d

cc: Mr. James Coyle
Mr. Raymond Miller
Mr. Paul Milman
Mr. Ron Berlien
Mr. Emil Johnson
Mr. Arthur Laurenson
Mr. David V. Walshe

ITEM B

Incorrect Nondestructive Examination of Pipe Spool Nonconformance as Reported by NRC

Item 2 - Contrary to Criterion V of Appendix B to 10CFR Part 50, and Section III of the ASME Code, Paragraph NA-4370, documentation was not made available to the NRC Inspector which would indicate corrective action requirements had been extended to a subcontractor who had examined fittings by the ultrasonic method instead of the required liquid penetrant, or magnetic particle method.

(1) Description of steps that have been, or will be taken to correct these items

(a) Prior to the Summer 1974 Addenda of the ASME Boiler and Pressure Vessel Code, ultrasonic examination was an acceptable method of examining welding fittings. Based on the original ultrasonic examination being performed and the subsequent magnetic particle/liquid penetrant examination of all external surfaces, TVA, the customer, accepted the fittings.

(2) Description of steps that have been, or will be taken to prevent reoccurence

(a) The Quality Assurance Manager has instructed receiving personnel with respect to reviewing materials to all Code, purchase order, and material specification requirements.

(b) The fittings vendor is another ITT Grinnell Plant with whom constant communciations have existed in the matter. A written formal corrective action request has been forwarded to the Plant Quality Manager.

(3) The date corrective actions and preventive measures were, or will be completed

(a) This corrective action report has been followed up at the fittings plant by Quality Assurance personnel from Corporate Headquarters, representing the group functioning under the writer's direct supervision and the corrective action is formally closed.

(e) All of the radiographic films with apparent penetrameter image enhancement have been examined by experienced and qualified Level III personnel to determine interpretability of the radiographic films. These examinations have confirmed that the welds represented by each of the films, represent weld quality levels in compliance with the requirements of Section III of the ASME Boiler and Pressure Vessel Code. These welds thus are entirely suitable for the required service.

(2) Description of steps that have been, or will be taken to prevent reoccurence.

(a) The problem with film penetrameter enhancement has again been reviewed by the Quality Assurance management at the Kernersville Plant, with all of the Radiographic examiners at the plant. This is to insure that this practice will not reoccur. Emphasis of the importance of proper penetrameter image utilization in radiographic examination practice will continue to be stressed during all training programs, and during the normal performance of radiographic examination practices at the Kernersville Plant.

(b) The plant's radiographic personnel will be again, instructed by Corporate Nondestructive Examination personnel on reemphasizing application of correct techniques to be used when performing radiographic interpretation. It has always been, and will continue to be our policy, that all work being performed be done with complete honesty and integrity, and that dishonesty on fabrication in any manner are cause for immediate dismissal without recourse.

(c) Future audits of any of the ITT Grinnell plants and field erection sites with ASME Nuclear "N" Authorization Stamps, where radiographic examinations are performed, will include the checking of radiographic films for evidence of penetrameter enhancement. (This writer has conducted such spot checks in the past.)

(3) Dates of Corrective Actions and Prevention Measures

(a) The review of the radiographic films for the Tennessee Valley Authority project in the possession of ITT Grinnell Corporation was completed on May 24, 1982.

(b) All of the NDE personnel at the Kernersville Plant where appraised of the problem with penetrameter enhancement on radiographic films, and have been reinstructed by plant management that this practice is absolutely not permissible.

(c) Another training program by Corporate Nondestructive Examination personnel has been scheduled at the Kernersville Plant for the week of June 14, 1982. Again, during this program, the importance of proper use of film image quality indicators will be emphasized and detailed.